Outline of the Proposed Research Work Entitled

A COMPARATIVE SPATIO –TEMPORAL ANALYSIS OF EDUCATIONAL AND SOCIAL SERVICES OF TAIZ CITY, YEMEN AND NANDED CITY, MAHARASHTRA, INDIA

Synopsis

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Introduction

Many people wonder about the relationship between geography and services. They consider services as purely economic sciences. This view continued until the 1960s, which represented the real beginning of the geographers' interest in this science. The geographical services emerged as a separate area of geographical services, which gained an important position as a branch of human geography. The science of geographical services has a role in promoting geography among applied sciences. Therefore, educational and social services have been selected for this study as two of the most important services that affect the individual and society. Moreover, they are considered as essential services which the city should provide.

Public organizational services and educational sectors in many cities of the Republic of Yemen including Taiz city encounter an imbalance in the spatial distribution of educational and social services and decrease in the allocated expenditures. Another issue is the high cost of education to the people. This results in constant pressure on educational and social services in the city because of the continuous spatial increase.

Because of the importance of educational and social services and their association either positively or negatively with many developmental, economic and social sectors that the city seeks to develop, and achieve quality and availability to all members of society**,** the study focuses on the spatial order of this types of services, using remote sensing techniques and geographic information systems (GIS).

The study aims at identifying their distribution and the extent oftheir diversity. The study also pays attention to the location and its effect on them and the means of transportations along with their challenges. Thus, the study will attempt to draw future planto redistribute or adjust them in order to achieve the spatial and sectorial efficacy. The study will attempt to improve the educational services at the level of quantity and quality. The study areas of the districts fromYemen includes "3" districts which containmain **Taiz** city and"58" blocks.And from India includes **Nanded city the** part of Marathwada in Maharashtra state, India.

Problem of the study

The distribution of educational and social services in the study area is characterized by spatial imbalance, centralization in distribution, low level of services provided to citizens in quantity and quality, and lack of consideration of the spatial dimension in their development plans.

Aims and Objectives:

1. Status of educational services in Taiz city and Nanded city.
2. To analyze the distribution, intensity, spacing rates, and student journey to educational services in Taiz city and Nanded city.
3. To study the pattern of concentration of educational services of all kinds and to know the level of their settlement within the urban fabric in Taiz city and Nanded city.
4. to understand the internal environment of the educational services in Taiz city and Nanded city.
5. To examine the Population characteristics in Taiz and Nanded.
6. Comparative study of Rural and Urban Services in Taiz and Nanded.
7. To explore the Health Services in Taiz and Nanded.
8. To study the Transportation facilities in Taiz and Nanded.
9. Evaluate the social status of the population in Taiz and Nanded.
10. Level of quality of services provided to the society.

Significance of the study

1. It tries to provide a scientific and practical vision for the official bodies of educational and social services in the study area to assist them in promoting them and achieving theirobjectives, inaddition to the importance of their results for development planners and investors in the private and city educational and social sector in Taiz city.
2. It contributes to providing the Yemeni library with specialized studies in thegeographical services that suffer from their shortage, hoping that this study will be the beginning of other studies to be followed, whether in the geographical or other fields such as planning, administrative and developmental studies, which will inevitably be useful to Taiz and other similar cities.
3. To take the Indian experience in the field of proving educational and social services as a model, and benefit from them via attempting to align them and approach their mechanism to the advancement of educational and social services in Taiz city.

Limitations of the study

Spatially, the study is limited to Taiz city with its official administrative boundaries. Objectively, the study is limited to study the spatial dimensions of educational services through its main components: schools, technical institutes,community colleges, and universities.

Temporally, it will be limited to the Central Statistical Organization data published in 2001-2021.Spatially, the study is limited to India with Its official administrative boundaries, and its s (28) states of controllers.

Objectively, the study is limited to study the spatial dimensions of educational and social services through its main components: schools, technical institutes, community collegesand universities.

Data Base and Methodology:

The data collected and used for the period of 2001-2021 both primary and secondary sources. The data for the present study were collected with the help of observation, informal in-depth interviews, key informant interviews, case studies and census schedules.

The primary data is the raw data collected through different sources for which special questionnaires were designed and information collected through various offices and peoples. Besides the above, Secondary data is also collected from the census handbook; District statistical abstract, Socio-economic review of different study areas of the cities from Yemen (Taiz city) which is located within Taiz governorate and from India (Nanded city is a part of Marathwada, Maharashtra State, India.

The data collected through primary and secondary sources were processed and presented by statistical and cartographic techniques. These involves Population growth rate, Decadal Growth Rate, Dependency Ratio, Sex Ratio, Work Participation Rate, Arithmetic Density, Age-sex specific rate and Crude Literacy Rate.

The different techniques and methods such as Maps, Graphs, calculation, and Isopleth, Choropleths and divided circle are used.

Research Methodology

The study will rely on a number of methodologies to achieve the aim of the study. These methodologies are:

1. The historical method

This method is used to track the chronological features of some phenomena that are related to the study. Moreover, this method is employed to track the numerical changes of public and private facilities and population in Taiz city (Yemen) and Nanded city (India)

based on chronological changes through which the distinction between the old and modern educational services will be revealed.

2. Spatial Method

This method is applied to this type of study. Its significance increased when geographers took interest in scientific planning during the last decades to distribute the educational services in an effective way to shorten the distance of study travels. Therefore, this study attempts to use such method during the examination of the distribution of educational services among the districts of Taiz city and Nanded city.

3. Spatial analysis method

This type of method reveals the spatial distinctions of distribution any phenomenon and its spatial discrepancies. The study will use such method to disclose the distribution of educational services, and the problem of the unbalanced distribution of education services to the population. The study will also attempt to analyze such discrepancies via measuring the percentage of spatial coverage of educational services in their existent locations and attempting to find ideal locations. Since the distribution is the final fruit of spatial relationships, it is necessary to identify the current distribution picture through the use of some measures that determine the distribution of the geographical phenomenon and its spatial trends in terms of aggregation and dispersion around a certain value and from these measures:

1. Mean center: This scale has two types:

- **The simple mean center:** this scale aims to determine the spatial distribution of educational services and highlight their focus by measuring the ratio of the (x, y) coordinates.

$$\bar{x} = \frac{\sum iXi}{n} \quad \bar{Y} = \frac{\sum iYi}{n}$$

- **The weighted mean center:** to the highlight the degree of influence of geospatial factors on educational services, so that each element gives a certain weight.

$$\overline{Yw} = \frac{\sum i(WiYi)}{\sum iYi} \quad \overline{Xw} = \frac{\sum i(WiXi)}{\sum iWi}$$

2. Median center: The GIS program calculates it iteratively by adding the distance

between the center of the mediator and other features of the educational services, then displacing it a little and repeating the collection process.

3. Influence: The GIS technology defines the belt area for each educational institution, that is, it defines the spatial boundaries to provide the service in a circular manner, the center of the educational service and its perimeter the maximum between the educational service and the population served.

4. Standard distance: It will be used to measure the degree of dispersion or concentration of educational services from their average center**.** In this scale, the greater the value of the standard distance from the center of the mean, the greater the variance and the dispersion of educational services, and vice versa. It can be calculated by the following equation:

$$\boldsymbol{SD} = \sqrt{\frac{\sum \boldsymbol{i}(\boldsymbol{Xi} - \overline{\boldsymbol{X}})^{\boldsymbol{2}}}{\boldsymbol{2}}} + \frac{\sum \boldsymbol{i}(\boldsymbol{Yi} - \overline{\boldsymbol{Y}})^{\boldsymbol{2}}}{\boldsymbol{n}}$$

5.Directional distribution: This scale allows within a program(Arc GIS 10) to show the direction of the distribution of educational services whether they take a circular shape and the extent of approach and distance from it, and it gives a more accurate picture compared to calculating the standard distance because the value of the standard distance is determined for the two axes (x y), and this is done using the following equation:

$$\boldsymbol{SDx} = \sqrt{\frac{\sum \boldsymbol{i}(\boldsymbol{Xi} - \overline{\boldsymbol{X}})^{\boldsymbol{2}}}{\boldsymbol{n}}} \quad \boldsymbol{SDy} = \sqrt{\frac{\sum \boldsymbol{i}(\boldsymbol{Yi} - \overline{\boldsymbol{Y}})^{\boldsymbol{2}}}{\boldsymbol{n}}}$$

6. Nearest neighbor analysis: It studies the distribution of educational services and determines the pattern of this distribution, is it random or concentrated, according to the following equation:

$$\boldsymbol{R} = 2d(^{N}/_{A})$$

In addition to all of the above, the study will use a number of approved local indicators and compare them with international indicators to reveal the efficiency of educational services in the study areas and the level of job performance they provide, and among these indicators "The index of the number of classrooms, the index of the educational institution's area, the index of the number of students per school, the index of classroom absorption, the index of the student's

share of the school space, the share of teaching staff from the number of students, the index of the school's location in relation to the roads, the index of the number of schools in relation to the population".

Tools and methods of Study

The study will rely on a number of tools and methods which include a number of techniques and quantitative statistical ways to present discuss and analyze the existent educational services in Taiz city and the Nanded city. Here are the methods:

1. **Quantitative method**

   This method is used analyze data that disclose the change of educational services in terms of their growth, temporal and spatial distribution, sectorial order, quality and efficacy and the extent of need to such services in the present and in the future as well.This method includes a set of statistical techniques, the most important of which are the relative change, the annual growth rate, the theoretical average, and the analysis of the scale" Scalogram" and other criteria that are used in the analysis of efficiency and adequacy in the provision of education service.

2. **Cartography method**

   This is one of the most important geographical methods used to analyze data. This method relies on maps, which considered among the most significant method of scientific research. This method unveils the surface features and spatial relations among geographical phenomena. The study will use Excel to present the data charts and Arc GIS to present maps.

3. **The method of Photography**

The study will use this method to show the real picture of educational services provided to the population in Taiz city and Nanded city, which may help the researcher in describing, analyzing and documenting the level of access to educational services in the Taiz city and the Nanded city.

FieldWork

The field work will be repeated visits to the different educational institutions to identify them on the ground from the both the study area. Learn about the nature of their work, verify the accuracy of data and information and to fill the gap of some information. Moreover, there

will be visits to the facilities that are related to education in order to gather statistical data regarding educational services. Personal interviews with a number of officials in the educational sectors will be conducted.
Furthermore, questionnaires will be distributed to students 'parents to find out the degree of their satisfaction with the existent education.

The Framework of the study

The study encompasses six chapters preceded by an introductory chapter and concluded with a conclusion that includes a plethora of results, recommendations and a list of references.

The introduction will include a number of elements: problem of study, aims of study, study questions, significance, hypotheses, aims for selecting the research problem and its limitations, previous studies, used methodologies, tools that study relied on, most prominent challenges and finally it concludes with the framework of the study.

Chapter One will examine the most important geographical standards and their impact on educational services in Taiz city and Nanded city, India. A number of human and natural factors contributed in shaping the impact of: population, diversity of buildings, the network of transportation, educational politics, the ratio of expenses on education and ownership. and among the most prominent natural factors are the geographical location and topography.

The second chapter deals with the temporal and sectorial changes of educational and social services (private and public) in Taiz city and Nanded city, India between the periods of 2001-2021. Urban and rural sectorial structure of this type of services in the governorate was also included in the study.

The third chapter will tackle the spatial distribution of educational and social services in Taiz city and Nanded city , India among all administrative units (public and private) in rural and urban districts of the governorate.

The fourth chapter deals with the efficacy of educational services in Taiz city and Nanded city , India via examining the density of classrooms for each standard. Moreover, the required percentage of teachers and students and the registrations will be discussed. The study will also discuss the studying periods and their impact on education. The nature of structure of schools will be compared them to the standards of Planning for Educational Services.

Chapter five will attempt to conclude with a future map for educational services in

Taiz city and Nanded city, India through identifying the gap in the educational and social services for the year 2001-2021.Furthermore, the study will attempt to estimate the future spatial necessity and its efficacy among the districts of the Governorate until the year of 2030 in accordance with the National Standards for Population.

Chapter Six Summery and Conclusions will attempt to encompass a number of findings and recommendations in an attempt to improve the level of providing educationaland social services in Taiz city and Nanded city, in the present and future as well.

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